



Construct Plaikni Falls Trail and Parking Area Crater Lake National Park Oregon

Chapter 1 - Purpose and Need

1.1 Introduction

Crater Lake National Park is located in southwestern Oregon on the divide of the Cascade Range. It lies in an area with a long history of volcanic and glacial activity, extending from Lassen Peak in northern California northward into Canada. Crater Lake occupies the collapsed caldera of the once majestic Mount Mazama.

Crater Lake is four and one-half to six miles across, has twenty-four miles of shoreline, a surface area of 13,192 acres, and a depth of 1,943 feet at its deepest point. It is the deepest lake in the United States. The landscape surrounding the rim of the caldera slopes downward and outward toward the boundaries of the park and is covered by glacial detritus and volcanic debris of various ages. Streams originating on the slopes of the caldera form headwaters of the Rogue River to the west or join the Klamath River drainage to the south and east.

The park surrounding the lake comprises approximately 183,224 acres and represents a varied topography, which rises from 3,937 feet in Red Blanket Canyon on the park's southwest corner to 8,926 feet at the summit of Mount Scott. Other topographic high points are Union Peak, Hillman Peak, and Timber Crater. There are numerous scoria cones in the park, which were fed from vents radiating outward from Mount Mazama. The park is heavily forested, except for a number of treeless and pumice-covered flats. There is little under-story of trees or brush and the terrain is open except in the southeastern portion where one finds thick stands of Douglas snowbrush (*Ceanothus velutinus*). Steep-walled canyons cut in pumice, such as at Annie, Castle, and Sun Creeks, contribute to the ruggedness of the terrain.

The park is surrounded on the north, south, and east by the Winema National Forest; on the north by the Umpqua National Forest; on the east by Sun Pass State Forest; on the north and west by the Rogue River National Forest. In addition, a small area of private land borders the southeast corner of the park.

The basic purpose of the park is defined by the congressional act, signed by President Theodore Roosevelt on May 22, 1902 (32 Stat. 202), which established Crater Lake National Park:

"... an area of two hundred and forty-nine square miles ... dedicated and set apart forever as a public (park) or pleasure ground for the benefit of the people of the United States, to be known as "Crater Lake National Park."

The act further states:

"That the reservation established by this act shall be under the control of the Secretary of the Interior, whose duty it shall be to establish rules and regulations and cause adequate measures to be taken for the preservation of the natural objects within said park,..."

The act requires that adequate measures shall be taken for

"... the preservation of the natural objects ... the protection of the timber ... the preservation of all kinds of game and fish..." and "that said reservation shall be open...to all... scientists, excursionists, and pleasure seekers."

Subsequent legislation, including the National Park Service (NPS) Organic Act of 1916 and the Redwood Act, emphasize the protection, preservation and interpretation of the natural and historic objects, scenery, and wild life of all national parks including Crater Lake. In meeting such mandates, park resources are to be managed in such a way as to maintain them in an unimpaired condition for the enjoyment of present and future generations.

Crater Lake National Park is required to have a comprehensive management plan called the General Management Plan (GMP). This plan sets broad management direction for Crater Lake National Park. The current GMP for the park was completed in 2005. The Environmental Impact Statement (EIS) completed for the GMP evaluated the development of additional trails in the context of broader park management. The assessment of potential impacts from future trail development proposals are individually reviewed and assessed when they are ready for implementation. That way the site specific impacts are tiered from the broader EIS and evaluated in the context of the more comprehensive potential for impacts than previously and more generally evaluated.

The GMP identifies several elements that relate to appropriate trail development in the park. The GMP guidance states that "...new front country opportunities such as short trails would provide transitional experiences between the transportation corridors and the front-country; enhanced interpretation; and access to the backcountry" (NPS, 2005). Developing new short front-country trail opportunities are identified within the current GMP as an appropriate action which the park can use to emphasize recreational diversity and provide opportunities to learn about park resources.

The park proposes to construct a new trail to a waterfall in the Anderson Bluff area which will provide these opportunities identified in the GMP along with increasing visitor opportunities for solitude and primitive experiences. This environmental assessment is tiered from the broader assessment of impacts from the park's GMP and additionally evaluates the site specific impacts of developing this trail.

In recognition of the Klamath Tribes cultural affiliation with the park a name was selected in honor of the people that traditionally used this area, Plaikni Falls Trail. The root meaning of the Klamath word *plai* indicates that the stream came from the upper or higher country. The waterfalls does not currently have an official geographic name and Crater Lake National Park will apply in cooperation with the Tribe to the State Board of Geographic Names to officially designate the name, Plaikni to the waterfalls.

1.2 Purpose and Need

Crater Lake National Park trail system consists of front and back country trails. The front-country trails lead to Crater Lake and to various peaks that allow viewing of the lake and surrounding areas. A few trails lead to areas that highlight other natural resources within park boundaries. Only two trails are currently tailored for those with limited physical mobility. The Pacific Crest Trail (PCT) is the major trail within the backcountry and travels across 34 miles through the park from the south to north boundary. Other backcountry trails are generally considered connection trails to the PCT and are not usually used to reach specific locations or features. Most park trails do not provide opportunities for visitors to travel to special, unique natural areas where interpretive opportunities are available. Water, native flowers, and rocky cliff areas presently are found together on only one park trail.

The addition of a new trail, Plaikni Falls Trail to Crater Lake's trail system would provide: 1) a transitional experience between front and back-country; 2) new interpretive opportunities that show both natural and cultural features; 3) a trail that could be used by those with different degrees of physical mobility issues; 4) enhanced visitors opportunities for solitude and primitive experiences; 5) a trail that travels to a special location of natural beauty; and 6) support for goals presented in the General Management Plan (GMP) by encouraging visitors to visit other areas of the park, reducing congestion at Rim Village.

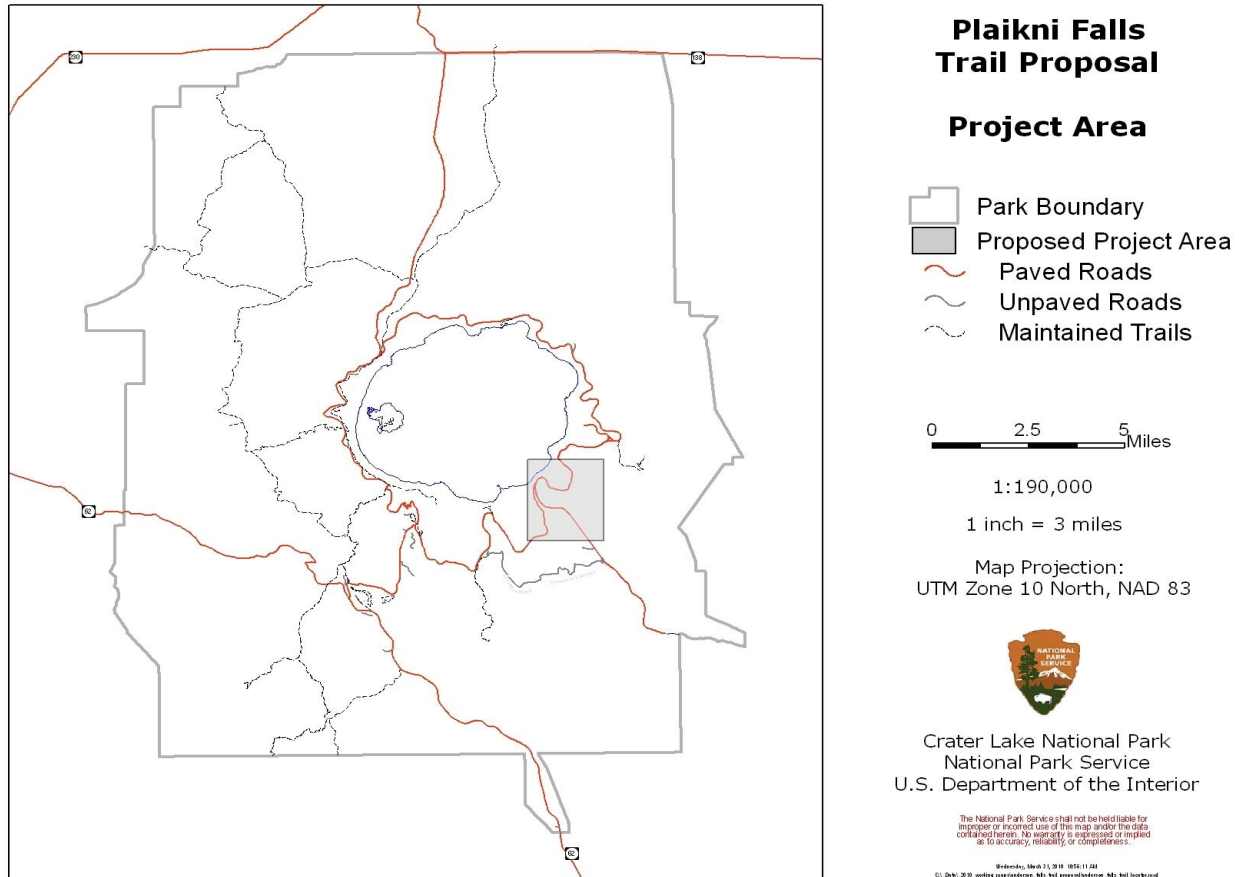
Consistent with the GMP this trail provides an opportunity to diversify visitors' overall recreational opportunities. Visitor surveys conducted in the past indicated that short trails are extremely important to a majority of visitors. The proposed Plaikni Falls Trail will increase visitor opportunities for recreation, education and interpretation, and access to the natural beauty of the Crater Lake National Park.

1.3 Project Location

The proposed project area (all alternatives) is located entirely within Crater Lake National Park boundaries. The project lies outside of the park's proposed wilderness and is confined to the park's Transportation Corridor and Backcountry Management Zones.

The project area (Figure 1) is located on the eastern side of the park with the proposed trailhead located on the Pinnacles Road, approximately one mile from the East Rim Drive junction. The proposed Plaikni Falls Trail would run approximately one mile in a southeast/east direction from the parking area to Sand Creek, following the creek north for another 700 to 800 feet to the foot of a waterfall. The proposed trail generally travels through very level terrain in a large conifer forest with little to no understory. It would open up in the last 700 feet to a lush vegetated area that highlights the falls.

Figure 1 – Project Area



1.4 Project Objectives

The proposed project has the following objectives:

- a. Encourage visitors to visit other locations within the park reducing concentration and congestion in the Rim Village area.
- b. Provide opportunities to explore natural surroundings away from the road corridors.
- c. Provide additional trail options for those with different degrees of physical mobility.
- d. Provide a transitional experience between front and back-country areas.
- e. Enhance visitors' experiences by insuring opportunities for solitude and/or primitive, unconfined recreation.
- f. Provide a well designed/constructed trail to minimize annual maintenance.
- g. Provide new interpretive opportunities.

1.5 Scoping Issues and Impact Topics

NPS Policy requires that all proposed projects be screened for potential impacts against a list of natural and cultural resource categories. Park management used an interdisciplinary review process to determine which resources could be affected by this project.

In addition, on January 20, 2010 the park solicited potentially interested parties for any additional concerns about this project. Letters were sent to Pacific Crest Trail Association, Winema National Forest, Rogue River National Forest, U.S. Fish and Wildlife Service, Klamath Tribes, Crater Lake National Park Trust, Crater Lake Natural History Association, Friends of Crater Lake and the Oregon Chapter of the Sierra Club. A letter asking for concurrence with the recommended finding of no effect on cultural resources was sent to the State Historic Preservation Office on January 25, 2010 and to Native Tribes affiliated with the park on January 25, 2010.

The following issues were identified by the park's interdisciplinary review as the Impact Categories by which each of the project alternatives are evaluated.

Air Quality

Crater Lake National Park is designated a Class 1 airshed under the Clean Air Act. This designation affords the highest level of protection of air quality related values. NPS policy seeks to perpetuate the best possible air quality in parks because of its importance to visitor enjoyment, human health, scenic vistas and preservation of natural systems and cultural resources.

Natural Sounds

Natural sounds are considered an important part of park ecology and visitor experience. NPS policy is to preserve and/or restore natural resources of the parks, including natural soundscapes. Natural sounds are intrinsic elements of the environment and may provide valuable indicators of the health of various ecosystems. A natural soundscape devoid of human induced noise is important to the visitor experience in a backcountry or wilderness setting.

Cultural Resources

The National Historic Preservation Act (16 USC 470 *et seq.*), National Environmental Policy Act (NEPA), National Park Service Organic Act, *NPS Management Policies* (2001), Director's Order – 12: *Conversation Planning, Environmental Impact Analysis and Decision-making* (2001) and Director's Order – 28: *Cultural Resources Management Guideline* require the consideration of impacts on cultural resources. Cultural resources include archeological resources, cultural landscapes, historic structures, districts and ethnographic resources. Although Crater Lake is known primarily as a natural park area, it does have significant cultural resources.

Native American Sacred Sites or Tribal Land Use

NPS policies require consideration of ethnographic resources. In the NPS Cultural Resource Management Guideline, an ethnographic resource is defined as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group people of traditionally associated with it.

Soils (Soil Erosion and Hydrology)

NPS policy is to maintain all the components and processes of naturally evolving park ecosystems. Soil properties are integral components of determining the species diversity, productivity, and regenerative capacity of

vegetation communities. Soil erosion can be caused by the natural hydrology flows in areas.

Threatened or Endangered Species

The Endangered Species Act (1973), as amended, as well as NPS policy, requires an evaluation of potential impacts on all federally listed threatened or endangered species. Evaluations are focused on species listed by the U.S. Fish and Wildlife Service as federally threatened, endangered and species proposed for listing that may be present on or in the vicinity of Crater Lake National Park.

Species of Special Concern

NPS policy requires the evaluation of potential impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. An assessment of potential species that could be impacted was completed based on information provided in an updated U.S. Fish and Wildlife Service species list (January 2010), habitat analysis, and type of work proposed in each alternative.

Visitor Experience

Providing for visitor enjoyment is one of the primary purposes of the National Park Service, according to the 1916 Organic Act and NPS Management Policies. Furthermore, the Crater Lake National Park's enabling legislation stipulates that visitors should have opportunities to enjoy the park in ways that leave park resources unimpaired for future generations.

Wetlands and Water Quality

Executive Order 11990 (Protection of Wetlands) and/or Executive Order 11988 (Riparian Area) require an examination of impacts to wetlands/riparian areas and protection of wetlands/riparian areas. It is the NPS policy to avoid affecting wetlands and to minimize impacts when they are unavoidable. Policy requires further examination at project level to avoid or minimize impacts.

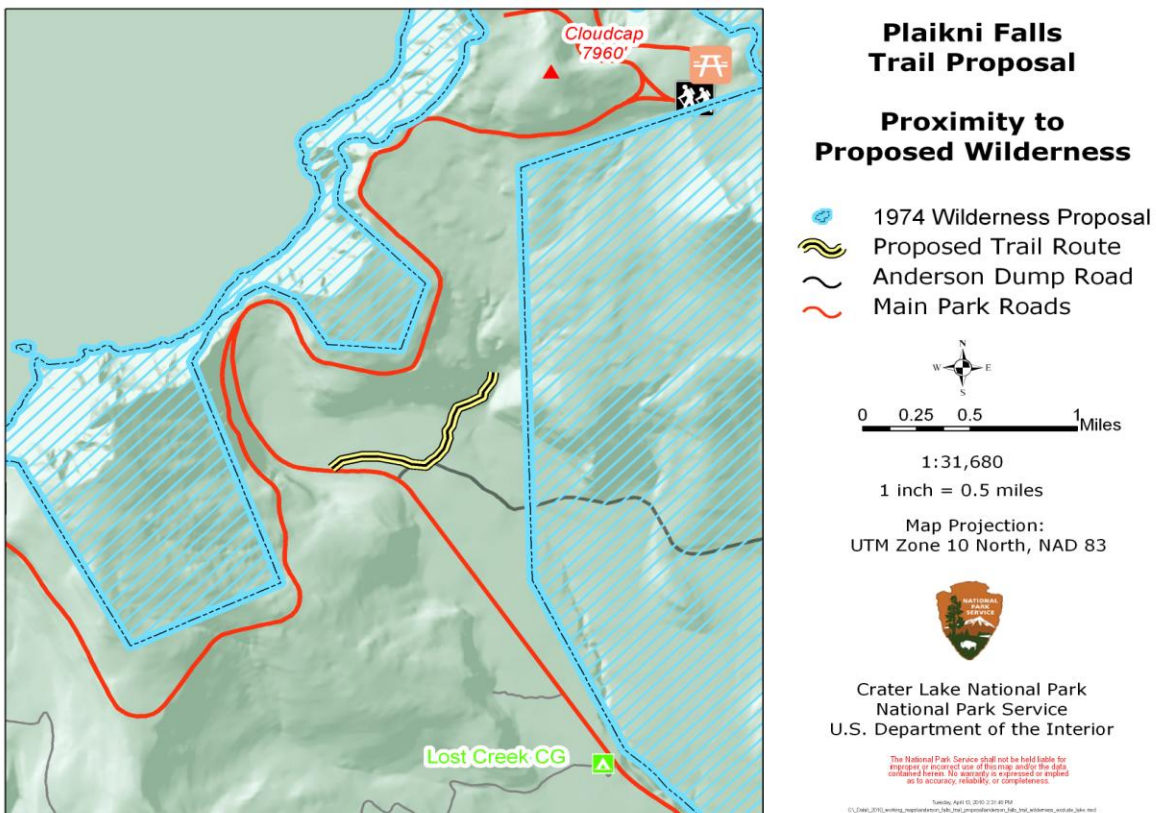
1.6 Scoping and Impact Topics Eliminated From Further Evaluation

The following topic was dismissed from further analysis during the internal scoping conducted by park staff. After both alternative locations were evaluated, it was found that neither alternative was inside the 1974 proposed Wilderness boundaries.

Wilderness Values

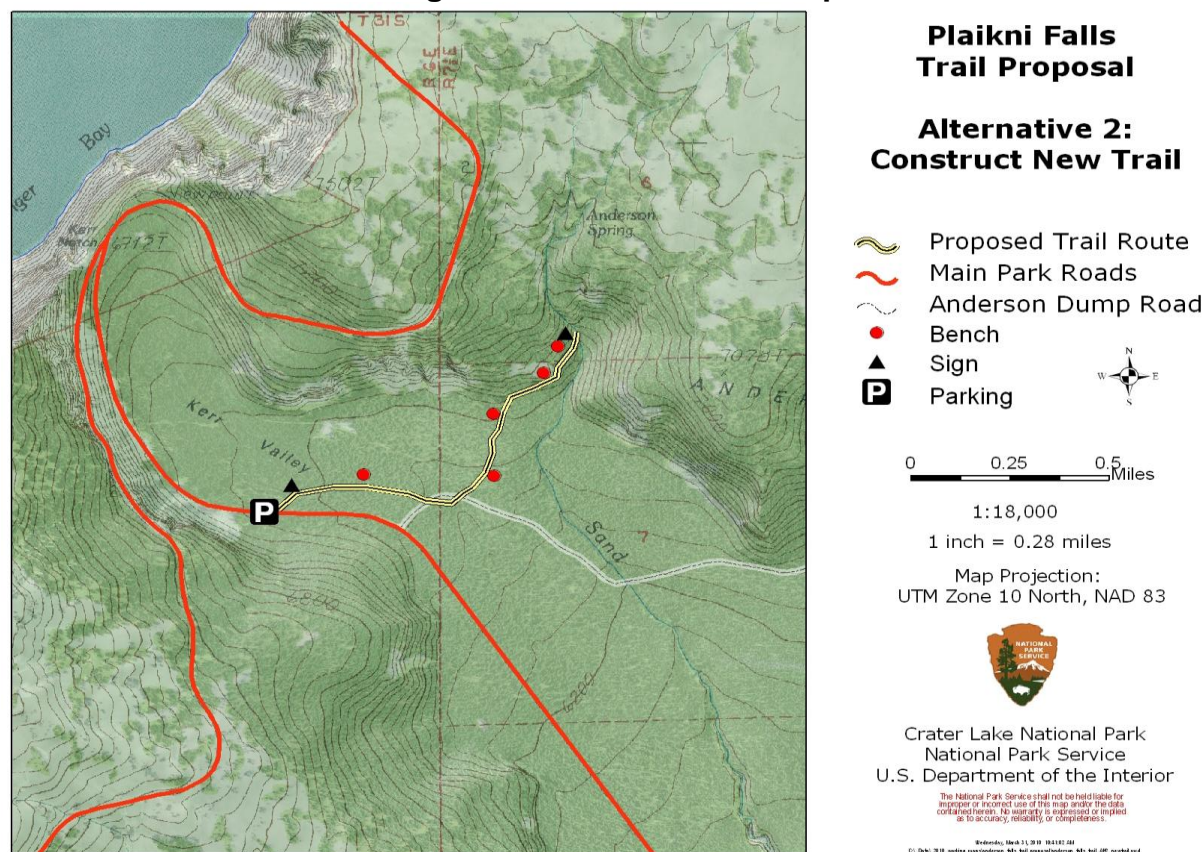
In 1974 Crater Lake National Park's recommended 122,400 acres of lands within its boundaries be designated wilderness. Although legislative process has not been completed for the park's wilderness designation proposal, it is NPS policy (2001 NPS Management Policies, Chapter 6: Wilderness Preservation and Management) to manage recommended wilderness as wilderness until this process is complete. All alternatives for this project are located outside the recommended wilderness boundaries (Figure 2). Therefore, this impact topic has been dismissed as an impact topic in this document.

Figure 2: Alternatives Locations within Wilderness Boundaries - Map



Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

Figure 4: Alternative 2 – Map



This alternative involves constructing approximately one mile of new trail through very level terrain to the base of a waterfall located on Sand Creek (Figure 4). The route was selected to provide hiking grades that are compatible for visitors with limited physical mobility, allow visitors to enjoy the solitude of the natural surroundings, and to reach a specific and unique location in the park. The proposed Plaikni Falls Trail would traverse through a conifer forest on a very level grade and contour around a cliff face to view the waterfall at the end of the trail. The trail would be designed to accommodate ADA accessibility guidelines. Trail grades would not exceed five percent at any given point along the proposed route. The travel way would be cleared of limbs, brush and other debris to a minimum clearance of four foot width by eight foot height to meet park trail standards. After duff removal, the surface would be dug and filled to provide a newly constructed thirty-six inches wide level tread. The trail would have a three to five percent cross slope where necessary. All tread obstacles over 2 inches would be removed or covered. Tread surface will be firm and stable but not paved. Additional trail structures that would be constructed include approximately two hundred feet of stone wall, a thousand feet of stone foot railing on outer trail edge, five rest areas, three benches, one viewing area, and approximately four signs. A wider space would be constructed to ensure a safe area to view the waterfalls and protect the natural resources. Natural stone would be used to provide barriers rather than constructing a more formal type handrail.

Additionally a graveled parking area would be constructed off the Pinnacles road. This site was selected because it allows cars a better visibility when entering/exiting the Pinnacles Road. It will be built with native materials with a two percent cross slope and along with a 130 foot drainage ditch at the front of the parking. Although this area is very level and shows little evidence of drainage issues, a swale-type drain would be placed along the front edge to accommodate any water flow from snowmelt or rainfall. Header boards would be used to provide a delineated parking area. Paving will be completed at the same time the Pinnacles Road is repaved in the future. An additional fifteen feet surrounding the actual parking area would be disturbed during construction for a total of 2000 square feet. This area is open and level so no large tree removal is required. It would also accommodate those with ADA issues. ADA designated parking slots would be put into place after any future paving. Materials utilized for the trail structures and construction of the parking area would be salvaged from an adjacent quarry site. Trail construction crews would camp within the adjacent quarry area for the project duration.

2.2 Alternatives Considered but Dismissed from Further Analysis

In addition to the two alternatives identified and evaluated in this document, one additional alternative for constructing a trail in the Anderson Bluff area was considered and dismissed. This alternative would have rehabilitated an existing roadbed and constructed additional new trail along Sand Creek to the falls. Existing road corridors or other disturbed areas are used for new construction sites in an effort to minimize new land disturbances within a park. This alternative was dismissed from further consideration based on deficiencies associated with a number of factors including:

1) *Natural resources:* This alternative required constructing .75 miles of new trail tread along Sand Creek which increases the possibility of impacts to the stream and associated wetlands areas. More side hill excavation would also be required which would increase siltation or sediment input to the stream from construction runoff. The proposed trail location would not avoid seep areas along these steeper side slopes. Usage of heavy power equipment would be required for the rehabilitation of 1.25 miles of the existing roadbed. Existing soils would have increased compaction due to the weight of the heavy equipment. Compaction decreases permeability, alters soil moisture content and diminishes water storage capacity. Natural soil processes would be restored in the rehabilitated areas only over the very long term, as the soil structure slowly returned to a more natural condition. Habitat for threatened or endangered and rare species would have been impacted because larger size trees would be removed to accommodate the size of equipment and an increase of noise throughout the project area.

2) *Visitor Use and Experience:* Some visitors who have different degrees of physical mobility might not be able to visit this area due to steeper grades and considerably narrower tread along the stream bed. Increased length may prevent some visitors from attempting the hike. This alternative did not adhere to management policies to consider aesthetic values as the existing roadbed travels directly through a highly impacted area (quarry). Aesthetic values are determined from a visitor's perception of a park and its surroundings such as scenic vistas.

3) *Budget costs:* The project would have significantly higher costs from heavy equipment use and additional hand crews. The additional costs include

mobilization, equipment rentals, and unanticipated repairs. Hand crews would still be needed to construct trail along streambed, construct trail structures, finalize disturbed areas and for any re-vegetation efforts. Additional trail structures would be required with the increased length.

4) *Sustainable design in developing facilities*: This alternative would require increased use of traditional construction methods (water bars, check dams, etc) and would increase future trail maintenance requirements. This would increase budgetary needs for future years and possibly create deferred maintenance. The NPS is striving to eliminate current deferred maintenance.

2.3 Environmentally Preferred Alternative

The National Park Service is required to identify the environmentally preferred alternative(s) for any of its proposed projects. That alternative is the alternative that will promote the national environmental policy expressed in NEPA, Section 101 (b)). This includes alternatives that:

- 1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- 2) ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- 3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
- 4) preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- 5) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- 6) enhance the quality of renewable resources and approach the maximum attainable recycling of depleted resources.

In essence, the environmentally preferred alternative would be the one(s) that “causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (DOI, 2001a).

The no-action **Alternative 1** meets criterion number 1, 4 and 5, fulfill the responsibilities ...as trustee of the environment and preserving important natural and cultural resources and achieves a balance between population and resource use.

In this case, **Alternative 2** (Preferred Action) is the environmentally preferred alternative for Crater Lake National Park since it meets goals 1, 2, 3, and 5 described above. Under this alternative, trail management activities would promote those goals stated NEPA and provide a solution to meet management goals set in the General Management Plan. These include: 1) enhancing visitors' experiences; 2) fulfilling stewardship roles; 3) providing a safe environment for visitors to view resources; and 4) providing a well designed/constructed trail to minimize annual maintenance needs.

This alternative fulfills park managers' responsibility to current and future generations by ensuring safe, esthetically and culturally pleasing surroundings and minimizing degradation of the environment while achieving a balance between visitors and resources use.

Chapter 3 - Environmental Analysis

3.1 Methodology

Impact analyses and conclusions are based on the review of existing literature and park studies, information provided by park staff, field surveys, professional judgments and insights of other agencies and officials, and input from interested local tribes and the public. Definitions used to evaluate context, intensity, duration, and cumulative nature of impacts associated with this project's alternatives are discussed below.

Context is the setting within which impacts are analyzed, such as the affected region, society as a whole, the affected interests, and/or a locality. In this environmental assessment, the intensity of impacts is evaluated within a local (i.e., project area) context, while the intensity of the contribution of effects to cumulative impacts is evaluated in a regional (i.e., park-wide) context.

Duration is the time period for which the impacts are evident. Short-term impacts are those that are noticeable during the project and six months thereafter. Long-term impacts are those that are evident for periods longer than one year after the project has been completed.

For this analysis, impact intensity or severity is defined as follows:

Cultural Resources/Native American Sacred Sites or Tribal Land Use

- Negligible – impact(s) at the lowest levels of detection. The determination under Section 106 of the National Historic Preservation Act (NHPA) would be *no effect*.
- Minor – disturbance of a site(s) results in little loss of significance or integrity to maintenance and preservation of a site(s). The determination under Section 106 of the NHPA would be *no adverse effect*.
- Moderate - disturbance of a site(s) diminishes the site(s) significance or integrity to the extent that its National Register of Historic Places (NRHP) eligibility is jeopardized. The determination under Section 106 of the NHPA would be *adverse effect*.
- Major – disturbance of site(s) has diminished the site(s) significance or integrity to the extent that it is no longer eligible to be listed in the NRHP. The determination under Section 106 of the NHPA would be *adverse effect*.

Biotic Communities (soils, vegetation, wildlife)

- Negligible - an impact that would cause small changes that is not measurable or would be at the lower levels of detection.

- Minor – an impact that would be detectable and could affect the abundance or distribution of individuals in a localized area with few measurable consequences for the overall community.
- Moderate – an impact that would be clearly detectable and could have an appreciable effect on the resource.
- Major – an impact that results in a substantial adverse or beneficial change to a biotic community.

Wetlands and Water quality

- Negligible – an action that could cause slight changes that would not be measurable or perceptible.
- Minor – an action that could cause a slight, indirect and localized change with few measurable consequences.
- Moderate – an action that would result in readily apparent changes to stream temperatures/habitats, litter/humus layers and wetlands' natural hydrology with measurable consequences.
- Major – a substantial adverse change to stream temperatures/habitats, litter/humus layers and wetlands' natural hydrology would result.

Air Quality

- Negligible – an impact would be at the lower levels of detection or not measurable.
- Minor – an impact would have a slight, localized effect on air quality or visibility.
- Moderate – an impact would have clearly detectable effects on air quality or visibility over a more widespread area of the park.
- Major – an impact would have severely adverse or exceptionally beneficial effects on air quality or visibility and potentially would affect the regional air shed.

Natural Sounds

- Negligible – an impact would be at the lower levels of detection or not measurable.
- Minor – an impact would have a slight, localized effect on the ambient acoustic environment.
- Moderate – an impact would have clearly detectable effects on the ambient acoustic environment over a more widespread area of the park.
- Major – an impact would have severely adverse or exceptionally beneficial effects on the ambient acoustic environment and potentially would have a long term affect.

Threatened or endangered species/Species of Special Concern

- No effect – when the alternative would not affect a listed species or designated critical habitat.
- Not likely to adversely affect – when the effects of the alternative are expected to be discountable or insignificant.

- May effect – when the alternative may pose any effect on listed species or desired habitat.
- Likely to adversely affect – any adverse effect to the species that may occur as a direct or indirect result of the alternative and the effect is not discountable, insignificant, or beneficial.

Visitor Experience

- Negligible - could have a small affect on visitor experience that would not be measurable and/or would affect few people
- Minor – could have a slight and localized effect on visitor experience with few measurable results and/or would affect some people
- Moderate – would affect visitor use in a readily apparent beneficial or adverse change and/or would affect a large number of people.
- Major – would have a substantial adverse or beneficial effect on visitor experience and/or affect the large majority of people.

3.2 Cumulative Impacts

Cumulative impacts are defined as the impacts on the environment from the alternatives when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts are considered for all alternatives. Past projects identified that contribute to cumulative impacts are the Union Peak/PCT/Stuart Falls trail rehabilitation/relocation and Rehabilitation of West Highway 62. Present and future actions in conjunction with this project that may have the potential to cumulatively impact resources include:

- Reconstruction of the Cleetwood Cove bulkhead
- Replacement of the Lost Creek waterline
- Rehabilitation of the Munson Valley waterline
- Rehabilitation of the Sun Notch Trail

Chapter 4 – Environmental Consequences

4.1 Air Quality/Natural Sounds

Affected Environment

The 1977 amendments to the Clean Air Act declared Crater Lake National Park a mandatory Class I area and charged the Superintendent with a responsibility to protect air quality related values, including visibility. The quality of air plays a vital role in visitor enjoyment, in the preservation of cultural resources, and in the perpetuation of natural systems. Crater Lake National Park is known for its clean air and spectacular vistas. Visitors standing on the summits of Mt. Scott, Watchman and Llao Rock can see south to Mt. Shasta in California and north to the summits of the Three Sisters and beyond. Besides visibility, natural sounds are also an important attribute of air quality. Natural soundscapes in parks are often taken for granted and until recently sound impacts were evaluated in a wilderness context of a human need for quiet and solitude. Research in acoustics and natural sound

demonstrate that natural sound is an important ecological attribute. Impacts to natural sound not only affect the human environment but can threaten the underpinnings of park ecology.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Under Alternative 1 there would be no new trail construction in the Anderson Bluff area. Therefore there would be no impacts to air quality or the natural soundscape of the park.

Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

Under Alternative 2, a new trail would be constructed in the project area. Trail construction would entail the use of hand crews as well as some motorized equipment including chainsaws and motorized wheelbarrows. During trail construction there would be localized and temporary impacts to air quality due to fugitive dust and emissions from equipment use. There would also be localized and temporary impacts to the natural soundscapes from the project activities. In both cases the short term impacts would be minor and would not last past the construction season. In the long term, development of a trail will open this area to more recreational use by the visiting public. However, the increase in public use is expected to be limited and restricted to non motorized use. Long term use will not contribute measurably to air quality impacts.

Cumulative Impacts

The cumulative impacts on air quality from actions in the park and surrounding lands would be similar for both alternatives. The park's air quality is very good with negligible effects from regional pollution sources outside the park. Contribution to total suspended particulates from agricultural burning and forest fires both inside and outside the park may result in moderate short term impacts to air quality. Fugitive dust emissions from future construction projects will contribute negligible localized and temporary particulate emissions. Noise impacts will not increase measurably beyond current levels associated with current visitation and road noise. Some minor increases in ambient noise levels are expected from construction and increases in visitation to the area. Alternative 1 will not contribute to these cumulative effects. Alternative 2 will temporarily contribute negligible amounts of fugitive dust emissions and minor noise impacts.

Conclusions

Alternative 1 will have no impact to air quality or natural soundscapes. Alternative 2 will have a minor and temporary impact to air quality and natural soundscapes in the short term and will have a negligible impact to air

quality and minor impacts to natural soundscapes in the long term. There will be no impairment to the park's air quality from either alternative.

4.2 Cultural Resources

Affected Environment

An environmental model of human use in prehistoric times has been developed to predict possible archaeological site locations at Crater Lake National Park. This model correlates environmental factors with site types as part of an overview that summarized the scientific knowledge of the American Indian experience in the Crater Lake region from prehistoric times to the present day. Areas containing certain environmental criteria, such as water, level terrain, accessibility, large animals, and plant resources are considered to be correlated with probability for archaeological sites, even though the park area is characterized by low site density. The project area exhibits two probability factors associated with obtaining food resources, areas of flat to moderate slopes, and the presence of game. Associated artifacts that might be expected within the project area include lithic scatters associated with the making of stone tools and similar isolated finds. These artifacts are tied to hunting, either along travel routes or at camp locations. The environmental model indicates that the project area has a relatively low probability for prehistoric or historic archaeological sites (defined as ten or more artifacts) and isolated finds associated with the pursuit of food resources in the vicinity.

The proposed trailhead parking area may be located adjacent to the Pinnacles Road, a route completed in 1932 that once connected Rim Drive with the park's east entrance and the old alignment of U.S. Highway 97 over Sun Mountain. This entrance was closed permanently in 1972, but motorists can still drive seven miles to the Pinnacles Overlook from the junction of Rim Drive near Kerr Notch. The National Park Service, with expected concurrence from the Oregon State Historic Preservation Office, has determined the Pinnacles Road to be eligible for listing on the National Register of Historic Places using age and integrity criteria. Any parking area built along the Pinnacles Road would not impact the road structure or characteristics such as curvature, width, and drainage. Should the trailhead parking area be constructed adjacent to the road, any signs indicating the trailhead's location would be placed off the shoulder in the right-of-way.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Alternative 1 proposes no ground disturbing activities outside of the currently disturbed roadbed. Therefore there would be no effect to cultural resources from this project or continued routine trail maintenance.

Alternative 2 - Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

Alternative 2 involves potentially ground-disturbing activities to cultural resources. An archaeological survey was conducted over the proposed trail alignment and no isolated finds or sites were recorded, thus no sites or isolated finds are known to lie within the proposed project area. The

archaeological survey report stipulates that artifacts should be avoided during construction of the proposed trail and parking area. If archaeological sites or isolated finds are discovered during construction activities, work shall be halted and the appropriate parties notified.

Cumulative Impacts

There are no cumulative impacts to cultural resources associated with Alternative 1 since no ground disturbance or other project activities would be implemented. Implementation of Alternative 2 would not bring about cumulative impacts to cultural resources since no cultural resources have been identified in the archaeological survey and only a negligible impact to an eligible historic property (the Pinnacles Road) has been identified if trailhead parking is constructed adjacent to it.

Conclusion

Alternative 1 would have no effect on cultural resources. Alternative 2 would have a negligible effect on cultural resources if trailhead parking is located adjacent to the Pinnacles Road. There would be no impairment to cultural resources from any of the alternatives.

4.3 Native American Sacred Sites or Tribal Land Use

Affected Environment

Traditional use in the proposed project area by members of park-associated Indian tribes has not been documented. Information from other locations in the park and the Cascade Range, however, provides some context for potential use within the project area. For example, the Cascade uplands were traveled for trade and resource procurement in both the pre- and post-contact periods. Members of the Klamath Tribes, the Cow Creek Band of Umpqua Indians, and other groups went to the Cascade uplands during the warmer months for large game, roots, berries, and other plant resources. In addition, previous ethnographic studies indicate that many Klamath living east and south of what became Crater Lake National Park traveled to Huckleberry Mountain in the summer to hunt and gather berries. Huckleberry Mountain lies approximately 15 miles due west of the project area in the Rogue River/Siskiyou National Forest.

Additionally, the rim of Crater Lake, as well as many nearby peaks, has been used for ritual purposes by members of park-associated tribes. A quest for power or vision often occurred in the mountains and included activities such as rock stacking. Archaeologists have recorded several such sites in the park, though none have been recorded in the project area.

Environmental Impacts

Alternative 1 – Construct No New Trail in the Anderson Bluff Area (No Action)

Alternative 1 does not propose ground disturbing activities within the project area or vicinity, so this alternative would not affect any land use by

members of park-associated Indian tribes or sacred sites. There would be no effect to any sacred site and/or tribal land use issues.

Alternative 2 - Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

Ethnobotanically significant plant species are largely absent in the proposed project area and no evidence of ritual use by members of park-associated tribes has been found. The archaeological survey report stipulates that surface artifacts or features such as rock stacks should be avoided if inadvertently discovered. Work shall be halted and the appropriate parties notified if artifacts or features associated with ritual use are located during construction activities. With this stipulation in place, there would be no effects on ethnobotanically significant plants or features associated with ritual use in the project area.

Cumulative Impacts

Implementation of this project, when combined with the impacts of implementing the recommendations of other past, present and reasonably foreseeable proposed actions would add no cumulative impacts on sacred sites or tribal land use as all alternatives would result in no impact to any sacred sites or tribal land use issues.

Conclusions

No known sites or features associated with ethnobotanically significant plants or ritual use have been recorded within the project area. There is a relative absence of plant species with ethnobotanical significance within the proposed trail corridor and previous consultation with members of park-associated tribes has not resulted in specific information about the project area. Indications of past or present ritual use in the project area have not been found, thus there would be no impairment to traditional use by members of park-associated tribes from either of the alternatives.

4.4 Soils

Affected Environment

Five major soil series are found within Crater Lake National Park (USDA 2002). Of the five, two of the major soil series are generally found in this location. These are the Llaorock and Castlecrest

Llaorock soil is composed of volcanic ash and bedrock fragments and is typically 60 inches in depth. The surface layer of this soil type is a dry, brown, very stony ashy sandy loam. The subsurface is dry, extremely stony medial sandy loam, light brown with fifty percent rock fragments.

Parent materials that compose the Castlecrest soil series is volcanic ash and pumice. The surface layer of this soil is grayish brown, ashy, loamy sand, while the subsurface is a dark grayish brown to a light yellowish brown, ashy sand, ashy loamy sand or ashy coarse sand.

Llaorock-Castlecrest complexes (0 to 15% & 15 to 30%) are found on side slopes of mountains and ridges. These soil series have rapid soil permeability with slow runoff, which results in little erosion where soils are protected by forest cover and sheet flow is not interrupted.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Under this alternative, NPS would take no action to develop a trail in this area, so no short-term impacts would occur from work activities associated with this current project work.

Alternative 2 – Construct Plaikni Falls New Trail in the Anderson Bluff Area (Preferred Alternative)

Under this alternative, minor short-term impacts would be expected. Approximately .49 acres of soil would be disturbed with the tread construction and parking lot development. The new alignment would require grades of travel at 5% or less through the route. The alignment would “fit” the trail to the ground, which means it would follow the contours of the land and maintain a uniform 3-5% outslope to the tread. By utilizing this method, it is anticipated that erosion problems would be eliminated because the trail would not intercept the sheet flow. The trail would thus not become the water channel. No long-term impacts would be expected because disturbances would remain at the site of the tread excavation.

Cumulative Impacts

The proposed actions from these alternatives would contribute a negligible and localized increment to the total cumulative past, present and reasonably foreseeable future actions. While an additional .49 acres of soil will be disturbed, the incremental contribution to soil disturbance from past development and foreseen development is negligible for both alternatives.

Conclusions

Under Alternative 1 there would be no additional impacts to soils from work activity. There would be short-term minor impacts to soils from new trail construction under alternatives 2. Long-term impacts from these alternatives would be minimal or non-existent. None of the alternatives would result in impairment to soils.

4.5 Threatened or Endangered Species

Affected Environment

A large variety of wildlife exists both seasonally and annually within the boundaries of Crater Lake National Park, including 74 mammal and 158 bird species. Many of these species may be seen throughout the project area, especially during the warmer snow free months. The U.S. Fish and Wildlife Service has identified

species within Crater Lake National Park that are classified and federally listed as either threatened or endangered, or proposed candidates for such listing. There are no endangered species present within Crater Lake National Park. Threatened species within the Park include the Canada lynx (*Lynx canadensis*), Northern spotted owl (*Strix occidentalis caurina*), and bull trout (*Salvelinus confluentus*), and the only candidate species for listing is the Fisher (*Martes pennanti*). There are no federally listed plant species within the boundaries of Crater Lake National Park.

The Northern spotted owl is an old-growth forest dependent species and potential suitable habitat is found in patches throughout the park, with a majority of the patches occurring southwest of a diagonal line running from the northwest to the southeast corners of the park. There are 17 identified spotted owl activity centers within Crater Lake National Park. Most of these were discovered when the entire potential suitable owl habitat was delineated and surveyed in 1995 and 1996. Potential suitable owl habitat is found in patches throughout the project area. However, because spotted owl surveys have only been conducted once near the project area in 1996, the current presence of spotted owls is unknown.

Bull trout are found in two streams at the park. However, the Crater Lake National Park fisheries biologist that studies the species has indicated that they do not occur at, or within a reasonable distance downstream of, the project area. Extensive surveys for Canada lynx within Crater Lake National Park in 2000-01 turned up no evidence of the species. As a result, biologists have concluded that it is unlikely that a viable population of Canada lynx resides in or near the park.

The only known population of Fishers (*Martes pennanti*) in Oregon occurs to the southwest of Crater Lake National Park, and is comprised of a breeding population from formerly reintroduced animals. The data indicates that fishers have utilized low elevation Douglas-fir (west side) and ponderosa pine (east side) stands on the fringes of the Park. The project area is near the center of the Park, at a much higher elevation, and is comprised primarily of mountain hemlock and lodgepole pine stands, making it very unlikely that this species or associated habitat occurs within the project area.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Since Alternative 1 describes no action to construct a trail, the alternative would have no effect on any listed threatened or endangered species.

Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

Noise and human presence would be expected during summer trail construction (July-September). Since potential spotted owl habitat occurs within the project area, and it is unknown whether spotted owls are present, the entire project area will be surveyed for spotted owls according to established protocols before any trail construction begins. Crater Lake biologists will contact the Klamath Falls USFWS office immediately if they find spotted owls in the project area. Consultation between the agencies

will occur to determine the appropriate way to avoid impacting spotted owls given the existing circumstances. No alteration of spotted owl habitat (e.g. no removal of trees larger than 6 inches in diameter) would occur within the project area.

Cumulative Impacts

Past, present and reasonably foreseeable future actions that may contribute to an effect on threatened and endangered species include prescribed burning and construction projects to related waterlines and lagoons. The listed species also have potential to be impacted by land management activities beyond the park boundary. These actions could result in short-term as well as some long-term effects on threatened and endangered species within a localized site. All alternatives for this project would result in no effect to listed species and hence would not contribute to the cumulative short and/or long-term effects on threatened, endangered species or their habitats from any past, present, and future actions.

Conclusions

Introduction of the human work force is temporary in nature, and the potential impacts to listed species (the spotted owl) will primarily be associated with noise disturbance from project activities. Potential spotted owl habitat in the project area would not be damaged due to no larger diameter trees (> 6 inches dbh) being removed while implementing this project. None of the alternatives described would affect any of the other federally listed threatened or endangered species or their habitats, as they are unlikely to occur within the project area. None of the alternatives would cause impairment to federally listed threatened or endangered species.

4.6 Species of Special Concern

Affected Environment

Crater Lake National Park is a potential home to five animal species listed as endangered (American peregrine falcon -*Falco peregrinus anatum*, Gray wolf -*Canis lupus*) or threatened (Bald eagle -*Haliaeetus leucocephalus*, Northern spotted owl - *Strix occidentalis caurina*, California wolverine -*Gulo gulo luteus*) by the state of Oregon. Northern spotted owl presence has been described in section 4.5, above. Both the peregrine falcon and bald eagle have nested within Crater Lake National Park. Past survey efforts for wolverines have failed to produce evidence confirming their presence within the park boundaries.

There are also 15 species that are listed by both the USFWS and the Oregon Department of Fish and Wildlife (ODFW) as species of concern, and an additional 15 species listed by ODFW as species of concern. These include large observable species such as the Northern goshawk (*Accipiter gentilis*), Great gray owl (*Strix nebulosa*), and American marten (*Martes americana*). About 25% of the listed birds are woodpeckers and half of the listed mammals are bats or voles. Within the area surrounding the project, several animal species that are listed as species of concern have been documented by visitor and staff observations. About 20% of the species of concern are not found within the park.

Plant surveys of the project areas will be conducted prior to project implementation to confirm that there are no plants listed by the state of Oregon as threatened or endangered and to document the existence of any exotic plants.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

As no specific project work is proposed in this alternative, no impact would be expected to habitat suitable for listed sensitive species. Therefore, there would not be impacts to any species of concern.

Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

This alternative would not damage any habitat suitable for species of concern. There would be no removal of large trees and only minor damage to the limited under-story vegetation would be expected (e.g. no trees > 6 inches diameter removed). If any species of concern are documented within the project area prior to or during construction, then measures will be implemented to avoid impacting the species. No sensitive plant species are currently documented within the project area. Additional surveys will be conducted prior to project implementation. If sensitive plant species are determined to occur in the project area, they will be protected by avoidance. Thus, there would be no effect to any animal species of concern or sensitive plant species.

Cumulative Impacts

Past, present and reasonably foreseeable future actions that may have a cumulative, localized effect on species of concern include prescribed burning and construction projects related to waterlines, rehabilitating roadways and lagoons. The species of concern also have potential to be impacted by land management activities beyond the park boundary. Because the work activities described in these alternatives would have no effect on species of concern, this project would not contribute to the cumulative effects of these projects.

Conclusions

There would be no impacts to species of concern while implementing this project because no major alteration or damage would occur while implementing this project to any habitats for species of concern. There would be no effect to rare plant species because sensitive plant species located along the current trail alignment would be avoided. None of the alternatives would cause impairment to sensitive animal or plant species or their habitats.

4.7 Visitor Experience

Affected Environment

Many of the visitors at Crater Lake National Park stop at the park as part of a north-south trip to various scenic areas in Oregon and northern California. Less than 15 percent of the park's visitors remain overnight, less than 5 percent stay two or more nights in park boundaries, and less than 1 percent are backcountry users. The percentage of park visitors obtaining outside lodging or campsites and returning to the park for day-use is unknown. The park's trail system contains 95 miles of maintained trails, including 33 miles of the Pacific Crest Trail. Summer use of the park's trails is sporadic, with most use occurring along the Pacific Crest Trail (NPS 1995).

The proposed new Plaikni Falls Trail would be utilized primarily by day-use hikers. The proposed trailhead would be located along the Pinnacles Road approximately one mile south of the intersection with East Rim Drive. The Pinnacles Road is a popular scenic route diverting off of East Rim Drive. The road leads past the Primitive Lost Creek Campground and terminates at the popular Scenic Pinnacles Overlook. The proposed Plaikni Falls Trail would be an additional attraction alongside the Pinnacles Road. It would provide an additional roadside stop for park visitors sightseeing along the Pinnacles Valley on their way to the Pinnacles Overlook. This short trail would also provide an additional hiking opportunity for park visitors spending the night at Lost Creek Campground. The proposed Plaikni Falls Trail would lead to a waterfall on the upper Sand Creek making it a destination spot for park visitors touring the east side of the park.

Winter use of the Anderson Bluffs Area is very limited. The proposal of a new additional trail in this area would not effect or even change the winter use currently found in this area. The East Rim Drive and Pinnacles Road are not maintained during the winter months. A heavy annual winter snowpack closes these roads for much of the winter. Access to this area is limited to skiing and snowshoeing and usually includes an overnight winter camping experience. Winter users will continue to access and enjoy this area as they do today.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Under this alternative no action would be taken to construct any additional vehicle parking pullouts along the Pinnacles Road. There would be no signs along the roadway to indicate trail access to the waterfalls. Visitor-use trends would most likely remain stagnant. With no new trail construction there would only be a very limited amount of park visitors that would venture the short distance beyond the roadway to experience this beautiful natural area. Hiking and recreational opportunities for park visitors within the Anderson Bluffs Area of the park would remain very limited. Park Interpretive Rangers would be unable to take advantage of this unique opportunity to enhance the park visitors' appreciation of this spectacular natural area. Winter use will remain the same.

Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

This Alternative will provide a unique recreational hiking experience for those park visitors sightseeing along the Pinnacles Road or overnight camping at the nearby Lost Creek Campground. This would provide visitors with safe vehicle access off of the park roadway with ample secure parking for their vehicles. The trail would be well marked and built to standards that would allow for easy visitor access and travel. The trail would include adequate rest areas to accommodate park visitors with various fitness levels. Park Interpretive staff would provide educational and interpretive trail waysides to enhance the park visitors understanding and appreciation of this beautiful area. This trail would provide a destination spot for park visitors interested in experiencing a spectacular natural feature within a somewhat remote area of the park backcountry. This alternative will include recreational hiking opportunities, will present interpretive and educational information, and will provide an area of solitude that will allow park visitors to enhance their appreciation of this unique natural area.

Cumulative Impacts

Past, present and reasonable foreseeable future actions identified that may contribute to cumulative effects on the visitor experience include past trail rehabilitation and relocation, reconstruction of Rim Village parking and rehabilitation of Highway 62 West. All of these actions are intended to improve the visitor experience in the park. The proposed project would contribute localized, negligible short-term effects and localized, beneficial, long-term effects on visitor experience to these cumulative actions.

Conclusions

Implementation of Alternative 1 would result in the current visitor experience within the Anderson Bluffs Area to remain the same. Most of the park visitors that travel the Pinnacles Road will continue to pass by the Anderson Bluffs Area and will be completely unaware that a waterfall exists only a short distance off of the park roadway. There will always be a few park visitors that venture beyond the roadways to explore remote locations in search of natural areas. There will be a few park visitors each summer or winter that will find their way into these waterfalls if Alternative 1 is implemented. The implementation of Alternative 1 will have no effect on enhancing the visitor experience for those that travel along the Pinnacles Roadway

Implementation of Alternative 2 would provide an outstanding recreational and interpretive hiking experience for those park visitors traveling to the Anderson Bluffs Area during the late spring, summer, and early fall months. Park visitors traveling the Pinnacles Road engaged in sightseeing activities along the Pinnacle Valley will have the opportunity to stop at the Plaikni Trailhead and hike the short trail to waterfalls. Park visitors camping at Lost Creek Campground will be able to take a short drive to the Plaikni Trailhead to experience a spectacular hike into the waterfalls. Park interpretive staff would provide trail waysides to enhance the visitor experience along the trail. Plaikni Falls Trail would provide countless opportunities for park visitors to experience the outstanding solitude of Crater Lake National Park.

Implementation of Alternative 1 or 2 will provide no change to the visitor experiences during the winter months of the year. The extreme winter snow pack and isolation will continue to limit the visitor experience to this area to all but the most seasoned and experienced winter backcountry travelers.

4.8 Wetlands and Water Quality

Affected Environment

The aquatic environment in the project area consists of springs, seeps, a waterfall, a riparian corridor, and Sand Creek. Water originates from groundwater sources, rainfall, and snowmelt. There are no tributary streams in the project area. Water quantity is highest during snowmelt and is determined by the depth of the snow pack and how quickly it melts. Groundwater flow will determine water quantity during the remainder of the year and will characteristically be of a low and constant volume. Occasional rainfall events will temporarily increase surface water flow in Sand Creek but will be of short duration and intensity. Wetlands are confined to seepage flow channels and the Sand Creek streambed. The riparian corridor does not contain any wetlands. Water quality is expected to be pristine and influenced by the quality of precipitation (rain and snow) and by the physical-chemical characteristics of the underground and surface environment through which water flows.

Environmental Impacts

Alternative 1 – No New Trail Constructed in the Anderson Bluff Area (No Action)

Under this alternative, NPS would take no immediate action to improve the quality of the trail, so no short-term impacts would occur from work activities associated with the proposed project work.

Alternative 2 – Construct New Plaikni Falls Trail in the Anderson Bluff Area (Preferred Alternative)

This alternative involves constructing approximately one mile of new trail through level terrain with approximately 800 feet near wetlands, Sand Creek, and the Sand Creek riparian corridor. The trail route proposed in Alternative 2 has been developed purposefully to avoid wetlands. The proposed actions may result in erosion of construction soils or natural soils disturbed during the construction phase. The actions may also result in an alteration of surface flow patterns in the vicinity of trail treads, stone walls, and the stone foot railings used on the trail edges. Vegetation may have to be cleared within four feet of the trail edge and to a height of eight feet, although this vegetation management will be outside the buffer zone for all riparian corridors. Threats to wetland vegetation are limited to the possibility of trampling by visitors traveling outside the approved boundaries of the trail. The proposed trail will have barriers and signage designed to minimize the possibility that visitors will enter wetland areas. Groundwater flow may be increased locally if surface water is diverted into the soils by the trail structure. The primary threat to the water quality is sediment contamination due to erosion.

Cumulative Impacts

Past and current NPS policies are to avoid where possible any impacts to wetland habitats or water quality. The proposed actions from these alternatives would contribute a negligible and localized increment to the total cumulative past, present and reasonably foreseeable future actions within the park.

Conclusions

Under Alternative 1 there would be no additional short or long-term impacts to wetlands and water quality in the project area. Under Alternative 2 three there would be negligible and localized impact to wetlands or water quality in the project area. There would be no impairment to wetlands or water quality under either alternative.

Table 1.1 – Summary of Consequences
Plaikni Falls Trail Project

Resource Issue	Environmental Consequences	
	Alternative 1 No Action	Alternative 22 Preferred Action
Air Quality/ Soundscapes	<ul style="list-style-type: none"> • No Impact • No Impairment 	<ul style="list-style-type: none"> • Minor and temporary impacts to air quality due to fugitive dust and equipment emissions • No impairment
Cultural Resources	<ul style="list-style-type: none"> • No impact • No impairment 	<ul style="list-style-type: none"> • No impact • No impairment
Sacred Indian Sites	<ul style="list-style-type: none"> • No impact • No impairment 	<ul style="list-style-type: none"> • As no known sites or finds are located in proposed trail route, would be no adverse effect. • No impairment
Soils	<ul style="list-style-type: none"> • No short-term impacts • Long-term impacts expected from continued erosion • No impairment 	<ul style="list-style-type: none"> • Short term impacts due to field work • Long-term impacts minimal or non-existent • No impairment
Threatened & Endangered Species	<ul style="list-style-type: none"> • No impact • No impairment 	<ul style="list-style-type: none"> • No impact • No impairment
Species of Special Concern	<ul style="list-style-type: none"> • No impact • No impairment 	<ul style="list-style-type: none"> • No impact • No impairment
Visitor Experience	<ul style="list-style-type: none"> • No impact 	<ul style="list-style-type: none"> • Short-term impacts due to work operations • No Long-term negative impacts • Long term beneficial impacts
Water Quality/Wetlands	<ul style="list-style-type: none"> • No impact • No impairment 	<ul style="list-style-type: none"> • Negligible impact • No impairment

Chapter 5 – Consultation and Coordination

The following organizations were consulted during the preparation of this environmental assessment:

- Fremont-Winema National Forest
- Rogue River National Forest
- US Fish and Wildlife Service
- Oregon Department of Fish and Wildlife District Office
- Klamath Tribes
- Crater Lake Natural History Association

The EA was distributed to the following recipients and posted to the Crater Lake National Park's website.

Klamath County Library
Klamath Falls Branch
126 Third Street
Klamath Falls, Oregon 97601
541.882.8894

Jackson County Library
Medford Branch
ATTN: Reference Library
413 W. Main Street
Medford, Oregon 97501
541.776.7280

Fremont-Winema National Forest
2819 Dahlia Street
Klamath Falls, Oregon 97601
541.883.6714

Rogue River National Forest
333 W. Eighth Street
Medford, Oregon 97501
541.858.2200

Umpqua National Forest
P.O. Box 1008
Roseburg, Oregon 97479
541.793.3310

US Fish and Wildlife Service
1936 California Avenue
Klamath Falls, Oregon 97601
541.885.8481

Klamath County Commissioners
305 Main Street

Klamath Falls, Oregon 97601

Jackson County Commissioners
10 S. Oakdale, Room 200
Medford, Oregon 97501

Oregon Department of Fish and Wildlife
District Office
1495 E. Gregory Road
Central Point, Oregon 97502

Klamath Tribes
P.O. Box 274
Chiloquin, Oregon 97624
Perry Chocktoot, Director Cultural and Heritage
Department

Pacific Crest Trail Association
Program Director
5325 Elkhorn Blvd, PMB 256
Sacramento, California 95842-2526

Crater Lake Natural History Association
P.O. Box 157
Crater Lake, Oregon 97604

Friends of Crater Lake National Park
P.O. Box 88
Crater Lake, Oregon 97604

Crater Lake National Park Trust
P.O. Box 62
Crater Lake, Oregon 97604

Chapter 6 - References and Appendices

6.1 Selected References

Trail Design, Construction and Maintenance, (1981) by William Birchard Jr., and Robert Proudman, Appalachian Trail Conference,

Handbook on Trail Building and Maintenance, Sequoia and Kings Canyon National Park, 1996 by Stephen S. Griswold

Trail Handbook, California Department of Parks and Recreation,

The SCA Trail-Building and Maintenance Manual, 1996 Student Conservation Association, Inc.

Report on the Archeological Survey of the Proposed New Trail at Anderson Bluff Project, 2009 Nichols, David; National Park Service, MOJA.

Archaeological and Ethnological Studies of Southwest Oregon and Crater Lake National Park: An Overview and Assessment, Mairs, J, Winthrop, K & R, 1994 National Park Service.

Zika, P. F., *A Crater Lake National Park Vascular Plant Checklist*, Crater Lake Natural History Association, Crater Lake, Oregon

General Management Plan - 2005, National Park Service, Crater Lake National Park

National Park Service Management Policies (2001), USDI, National Park Service, Chapter 6: Wilderness Preservation and Management.

National Park Service Management Policies (2001), USDI, National Park Service
Procedural Manual #77-1: Wetland Protection (2008), National Environmental Policy Act (NEPA)

National Park Service Director's Order -12 (2001), *Conversation Planning, Environmental Impact Analysis and Decision-making*, USDI, National Park Service.

National Park Service Director's Order – 28 (2001), *Cultural Resources Management Guideline*, USDI, National Park Service

Soil Survey of Crater Lake National Park (2002), Oregon, United States Department of Agriculture, Natural Resource Conservation Service, in cooperation with United States Department of the Interior, National Park Service

Species List, Dated: March 8, 2010, US Fish and Wildlife Service, Klamath Falls Fish and Wildlife Office, Klamath Falls, OR, Web address:

http://www.fws.gov/klamathfallsfwo/es/species_list/Klamath%20County%20Species%20List.pdf

6.2 Preparers and Consultants

Crater Lake National Park

Mac Brock, Chief of Resource Preservation and Research
Cheri Killam-Bomhard, Trails Supervisor
Mark Buketenica, Aquatic Ecologist
Steve Mark, Park Historian
Jeff Runde, Data Manager
Wendy Wayne, Natural Resource Management Assistant
Greg Holm, Wildlife Biologist
David Hering, Fisheries Biologist
Chris Wayne, GIS Specialist
Peter Reinhardt, Chief Ranger
Marsha McCabe, Chief Interpretation and Cultural Resources

Mojave National Preserve

David Nichols, Park Archeologist

Klamath Tribe

Perry Chooktoot, Chief of Cultural Resources

U.S. Fish and Wildlife

Trisha Roninger, Ecological Services Division Chief
Elizabeth Willy, Fish and Wildlife Biologist
Nolan Banish, Fisheries Biologist

Attachment A: LISTED, PROPOSED, AND CANDIDATE SPECIES THAT MAY OCCUR IN
KLAMATH COUNTY, OREGON



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Klamath Falls Fish and Wildlife Office
1936 California Avenue, Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541) 885-7837
kfalls@fws.gov



**LISTED, PROPOSED, AND CANDIDATE SPECIES THAT
MAY OCCUR IN KLAMATH COUNTY, OREGON**

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Lost River sucker	<i>Deltistes luxatus</i>	Proposed
Fish	Shortnose sucker	<i>Chasmistes brevirostris</i>	Proposed
Plant	Applegate's milk-vetch	<i>Astragalus applegatei</i>	

Status: **Threatened**

Phylum	Common Name	Scientific Name	Critical Habitat
Bird	Northern spotted owl	<i>Strix occidentalis caurina</i>	Designated
Fish	Bull trout (Klamath River DPS)	<i>Salvelinus confluentus</i>	Designated
Mammal	Canada lynx	<i>Lynx Canadensis</i>	

Status: **Candidate**

Phylum	Common Name	Scientific Name
Amphibian	Oregon spotted frog	<i>Rana pretiosa</i>
Bird	Yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>
Bird	Greater Sage-grouse	<i>Centrocercus urophasianus</i>
Invertebrate	Mardon skipper butterfly	<i>Polites mardon</i>
Mammal	Fisher	<i>Martes pennanti</i>